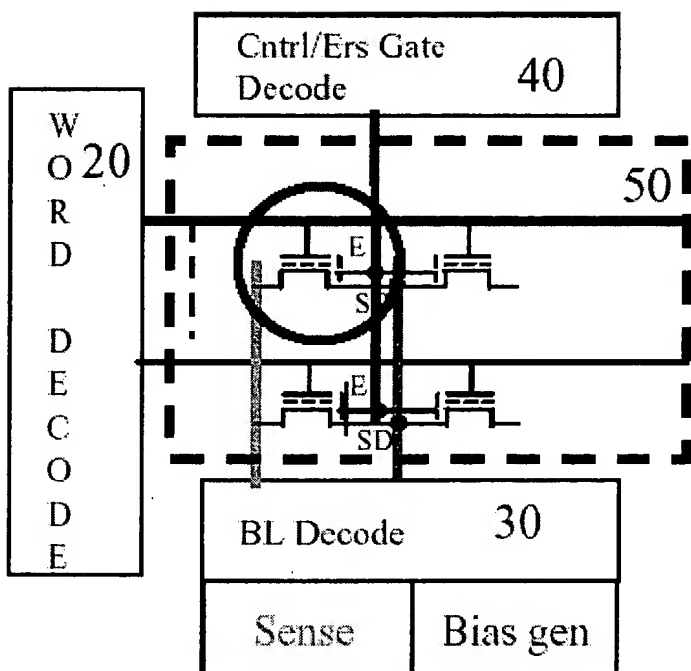
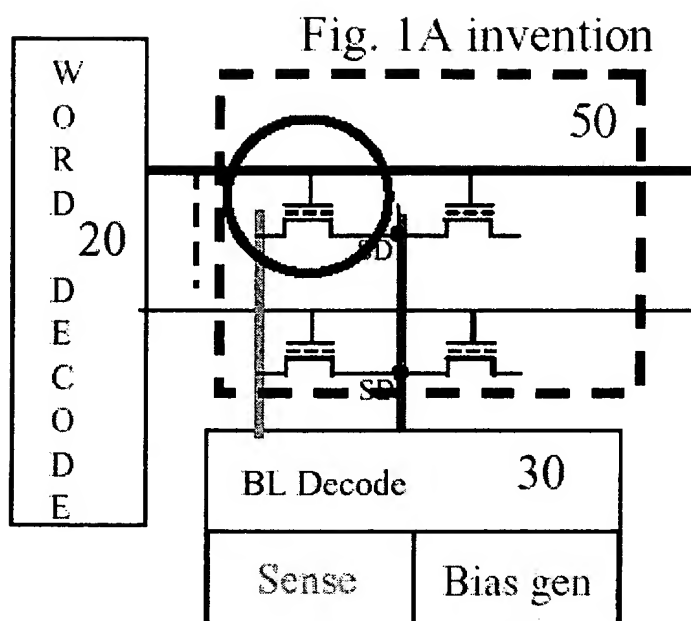


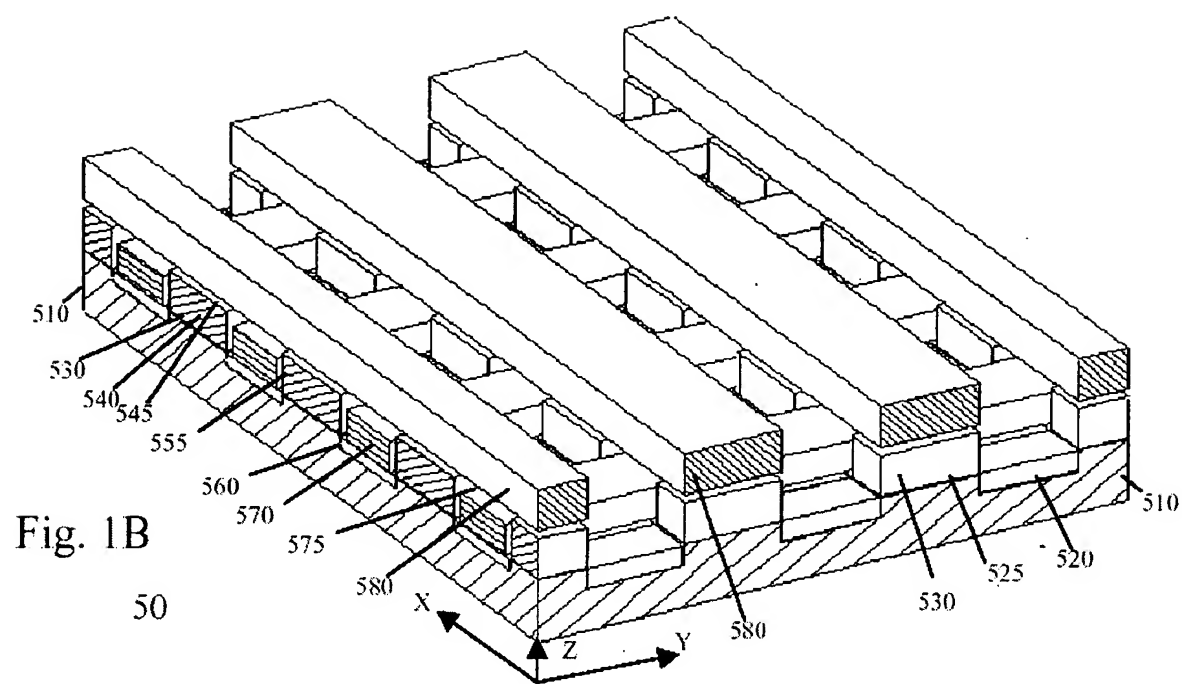
10

Fig. 1, Prior art



10





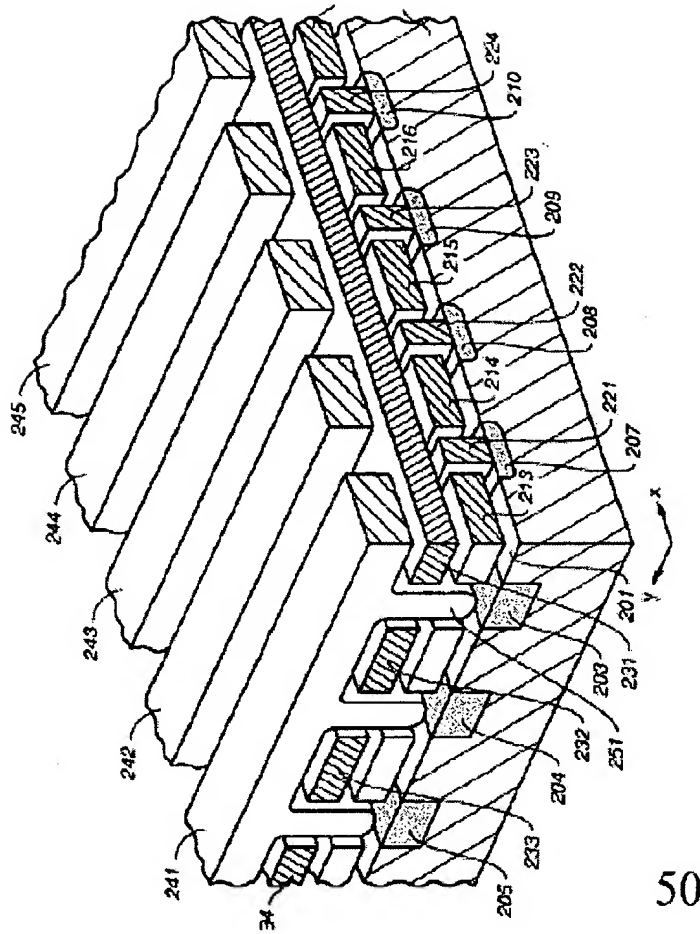


Fig. 1C Prior art

Fig. 1D

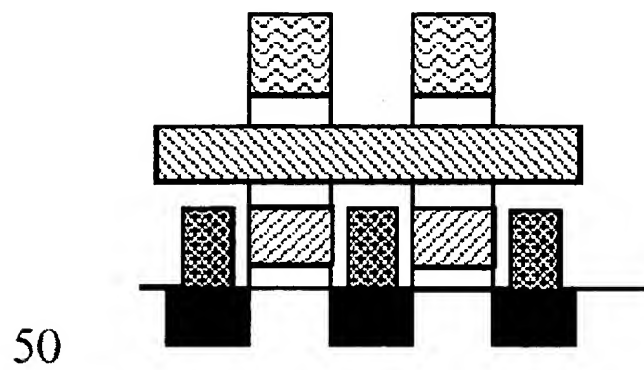


Fig. 1E

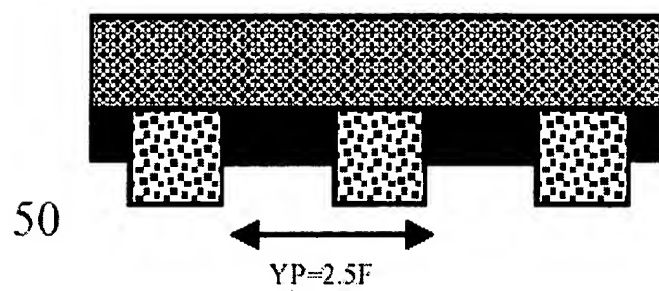


Fig. 1F

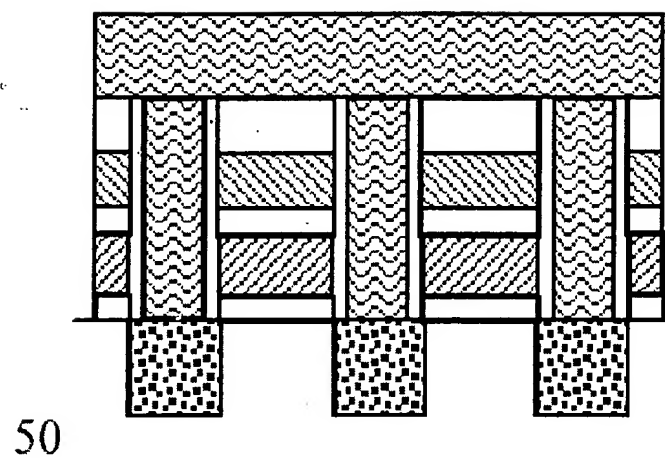
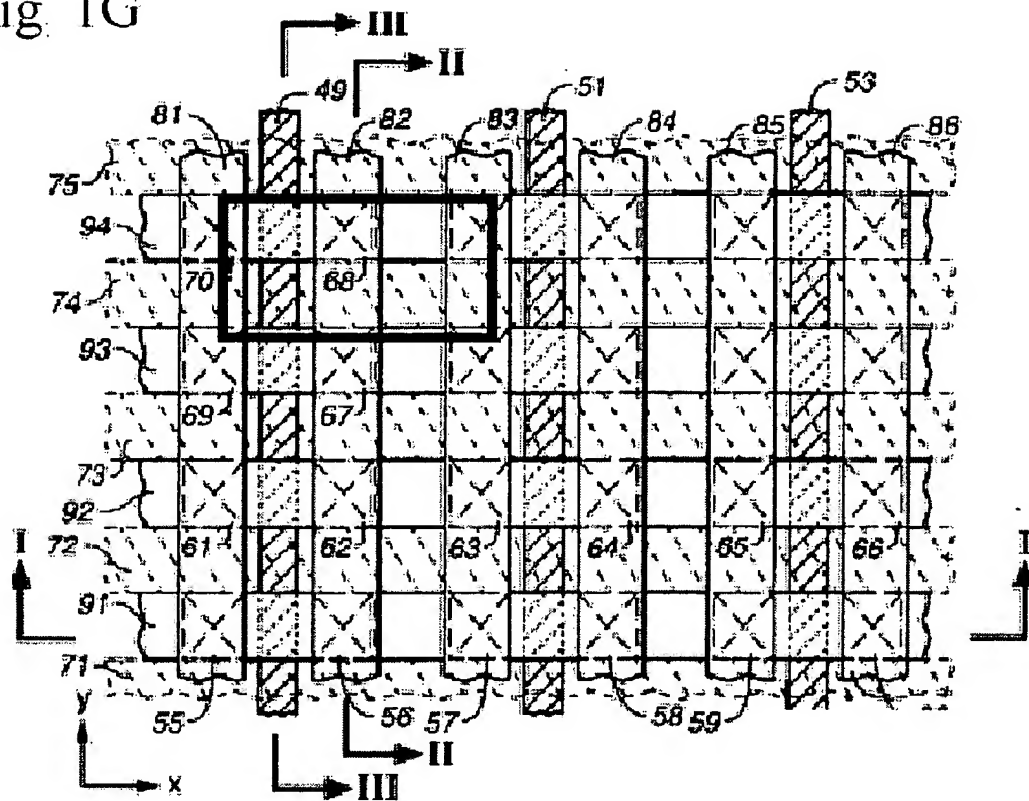


Fig. 1G



1H

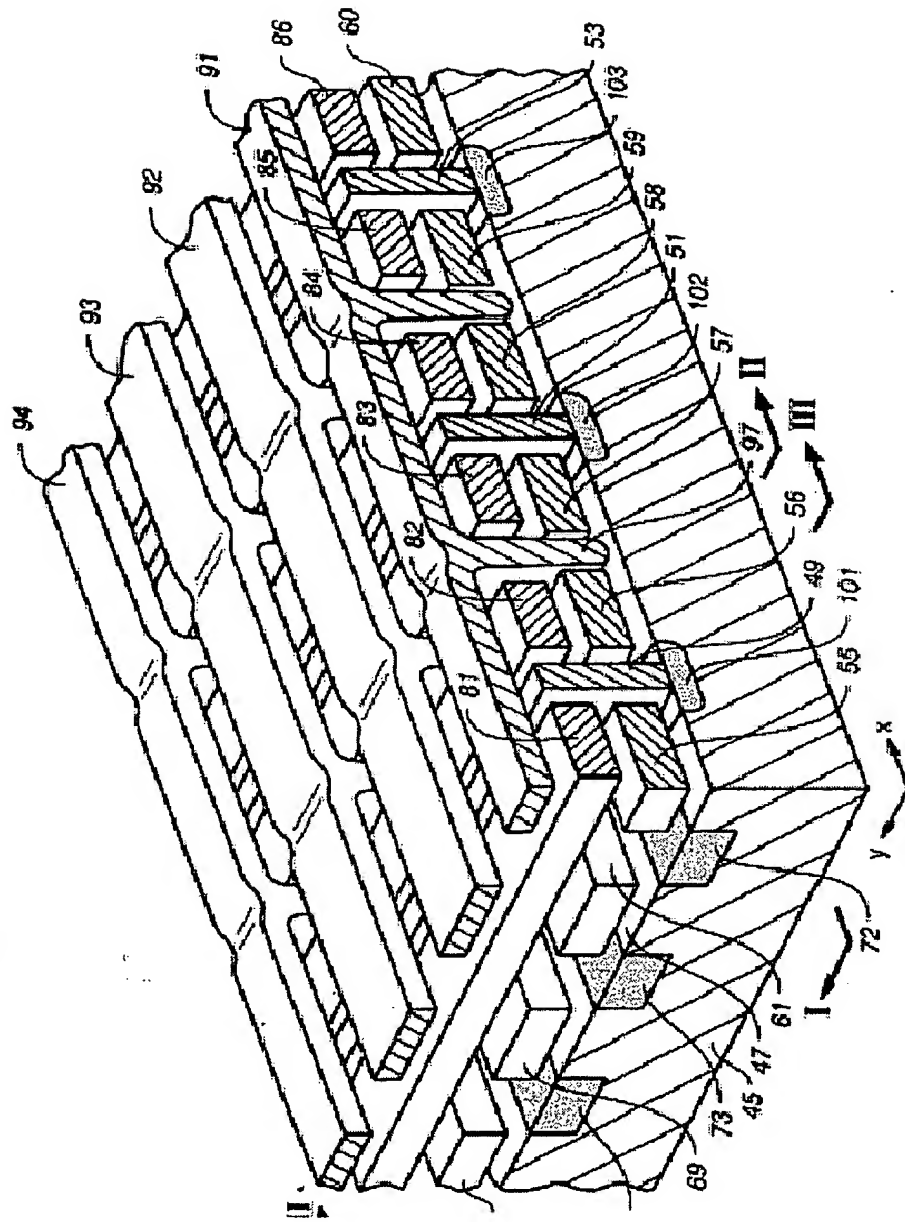


Fig. 1I

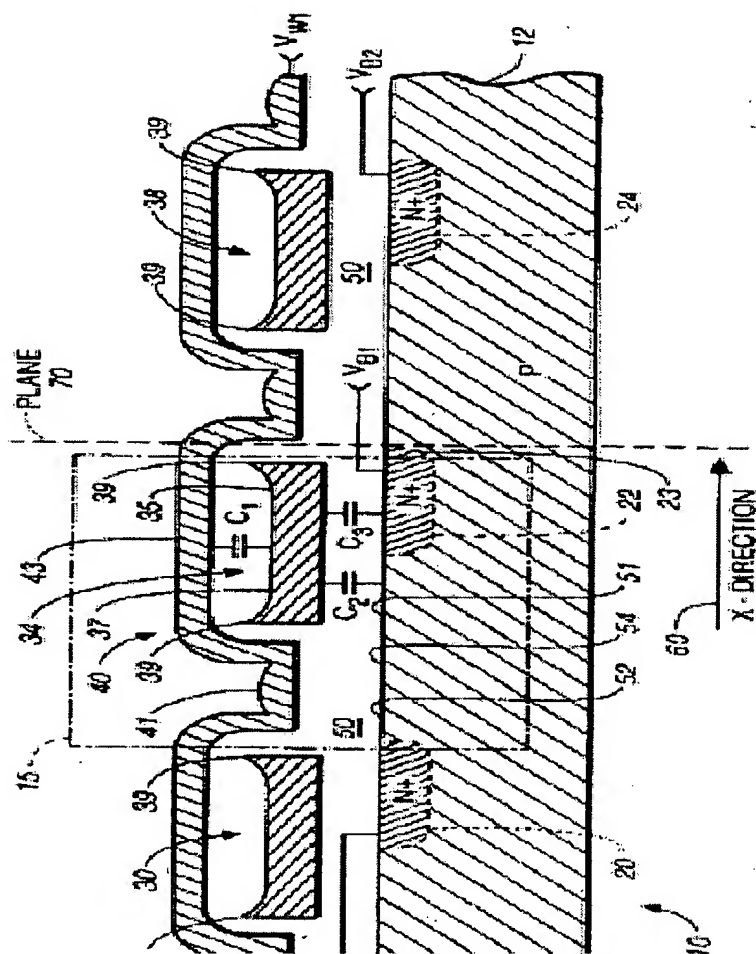
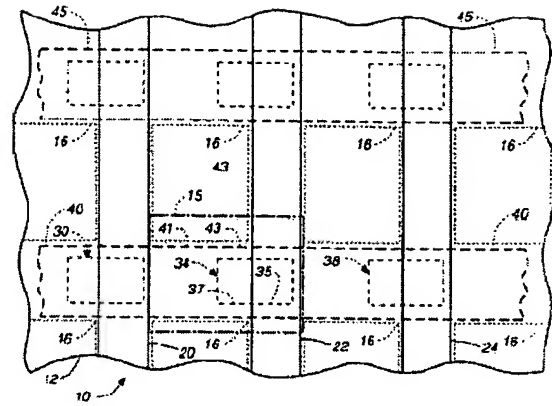
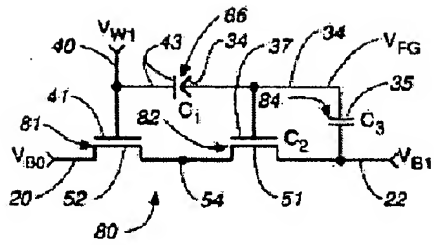


Fig. 1J



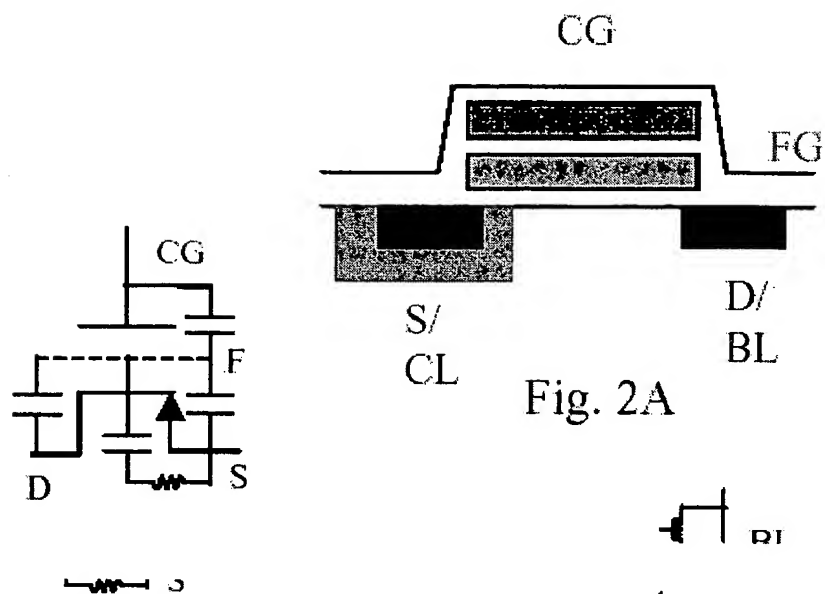
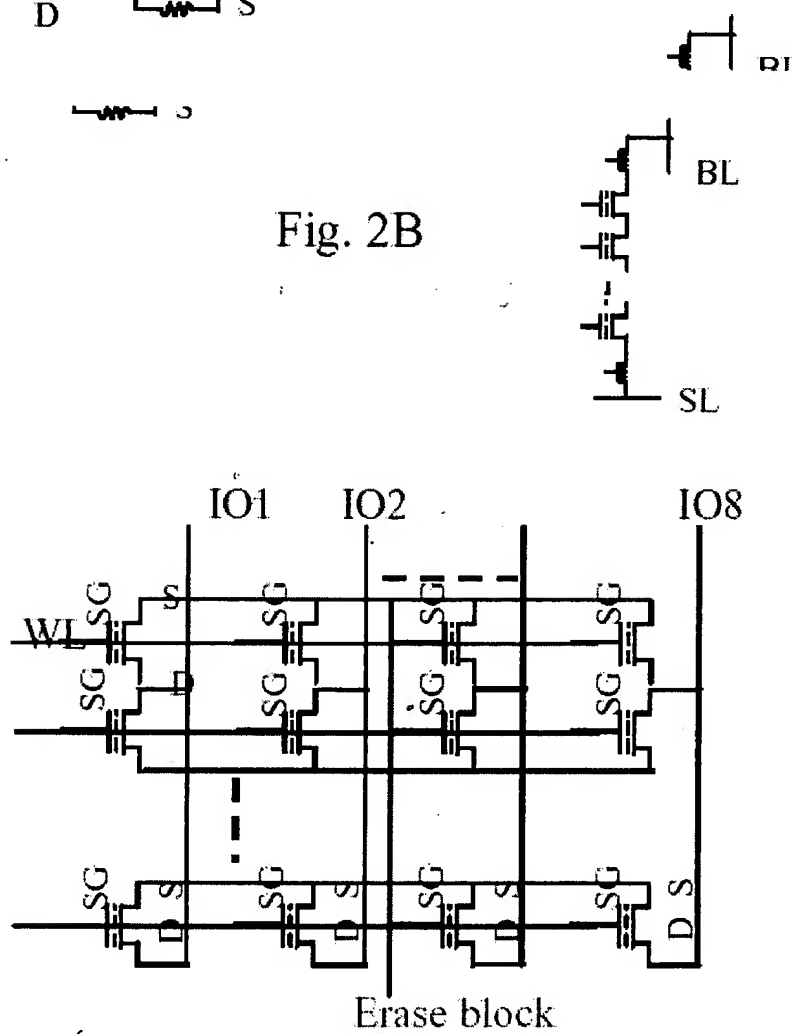
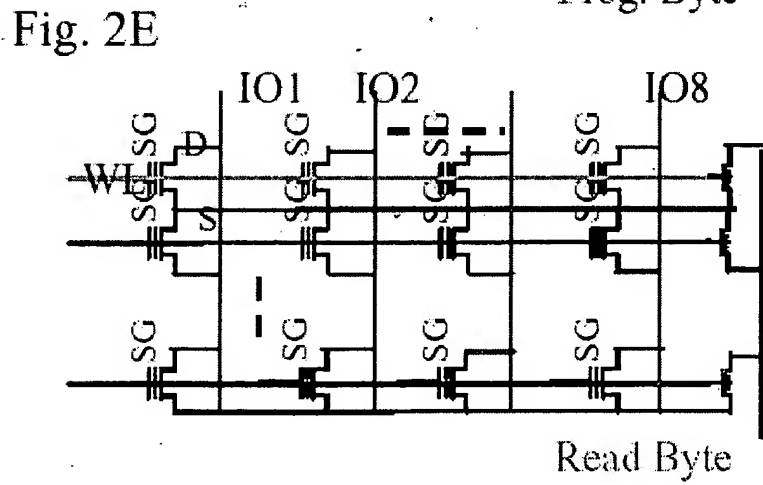
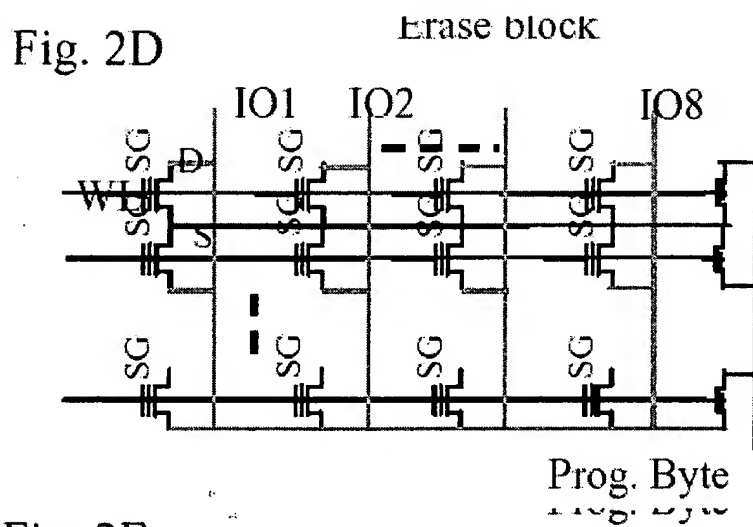
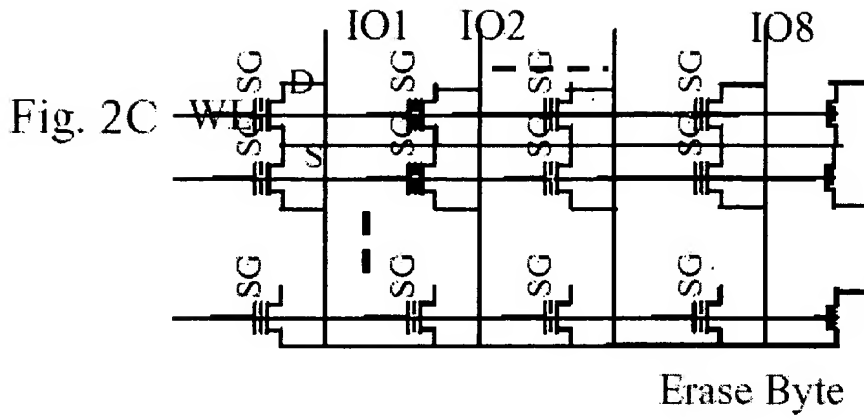


Fig. 2A

Fig. 2B





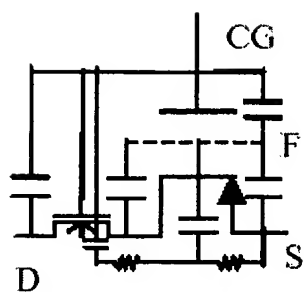
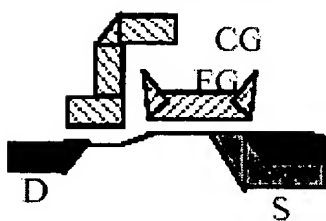


Fig. 3  
Prior art



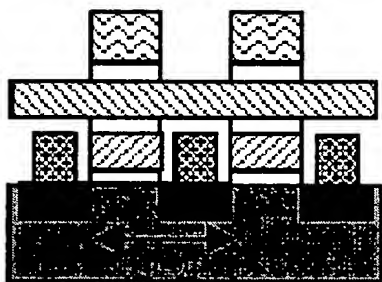


Fig. 4A ZX cell view, Prior arts

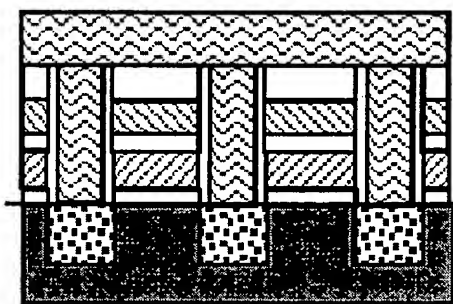


Fig. 4B ZY cell view, Prior arts

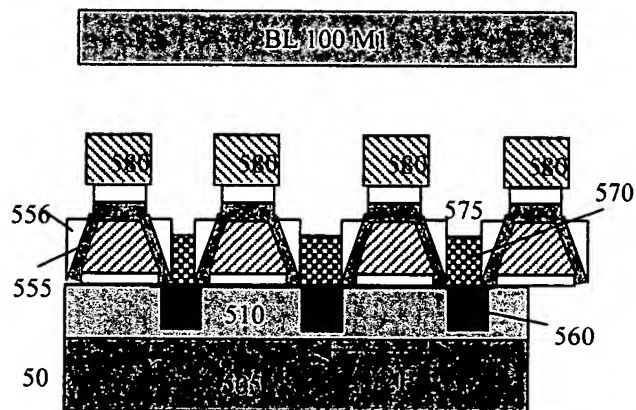


Fig. 5E ZX cell view, invention

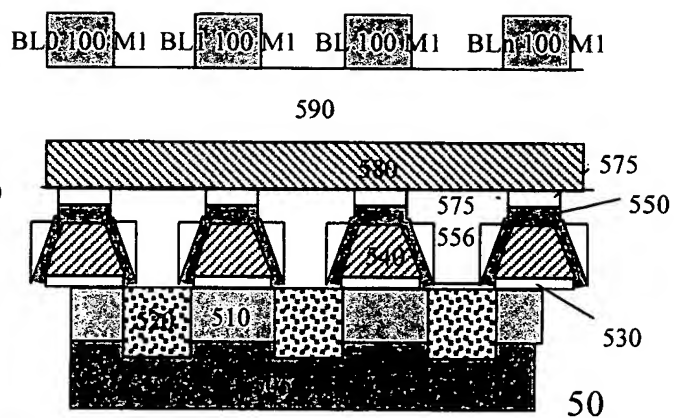


Fig. 5F ZY cell view, invention

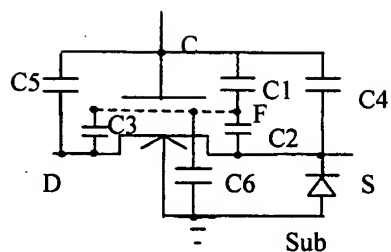


Fig. 5D Circuit model of the invention

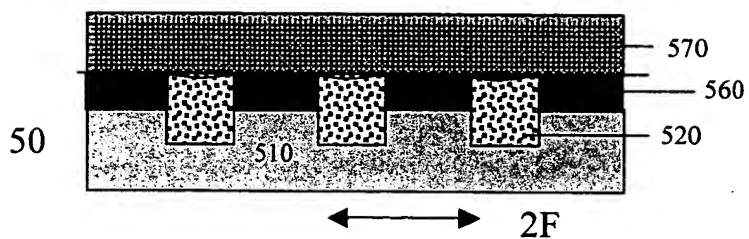


Fig. 5C Another ZY view of the invention

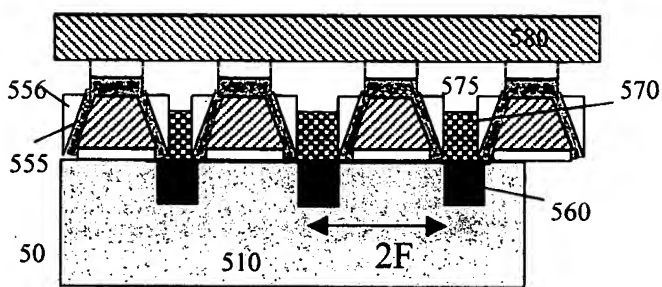


Fig. 5A ZX cell view, invention

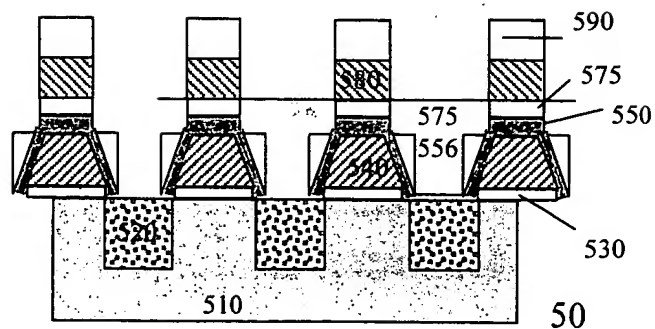


Fig. 5B ZY cell view, invention

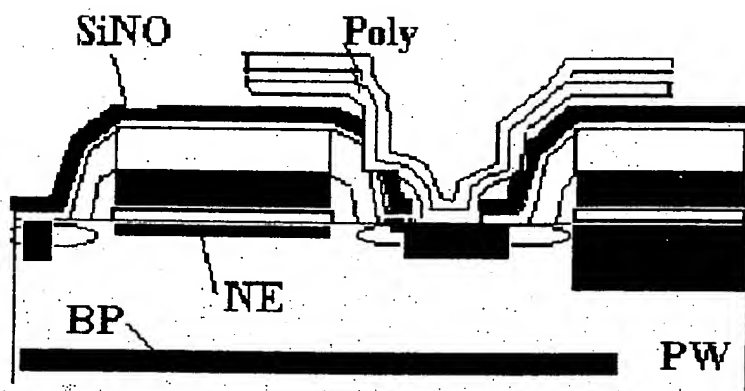


Fig. 5G

## The FLASH ROM cell model

### A. Cell Dimensions

Device Parameters		Samsung	SSTI	SanDisk	GSD
feature size, um	0.2	Prior 1	Prior 2	Prior 3	Invention
lfx, um		0.2	0.2	0.2	0.2
Vfy, um		0.2	0.2	0.2	0.2
hsdz, um erfsd	5.5			0.1	0.1
Ssw, um				0.02	
Afc, squm		0.04	0.04	0.04	0.04
Afsb, um		0.03	0.03	0.02	0.01
Afsd, um		0.01	0.01	0.02	0.03
lcx=2f, um		0.4	0.5	0.4	0.4
lcy=2f, um		0.4	0.4	0.4	0.4
Cell hor. area, squm		0.16	0.2	0.16	0.16
Poly Si layers		2	2	2	2

### B. BL-FG Coupling Factors in Erase Mode

Erase	Prior Art 1	Prior Art 2	Prior Art 3	GSD
Vwl	0	0	0	0
Vfg	1	1	1	2
Vsl	12	10	12	5
Vbl	Float	Float	Float	Float
Sfc, um	0.1	0.05	0.02	0.015
Cfc, fF	0.0014	0.0028	0.0140	0.245
Cfsb, fF	0.0105	0.0105	0.0140	0.0140
Sfsd, um	0.0100	0.0100	0.0200	0.0200
Cfsd, fF	0.0035	0.0035	0.0035	0.0062
Fcfb	0.0909	0.1667	0.4444	0.5481

Fig. 5H (Page 1 of 2)

### C. WL-FG Coupling Factors in Write Mode

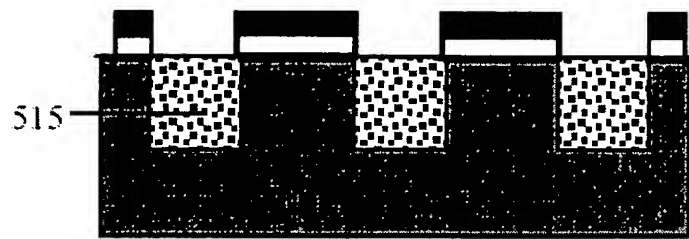
Write	Prior Art 1	Prior Art 2	Prior Art 3	Invention
Vwl	12	9	12	5
Vfg	6	6	6	3
Vsl	0	0	0	0
Vbl	7	7	7	5
Sfc, um	0.1	0.05	0.02	0.015
Cfc, fF	0.0140	0.0021	0.0070	0.0245
Cfsb, fF	0.0039	0.0053	0.0140	0.0140
Sfsd, um	0.0100	0.0100	0.0200	0.0150
Cfsd, fF	0.0035	0.0007	0.0035	0.0123
Fcfc	0.3469	0.7391	0.7143	0.5272

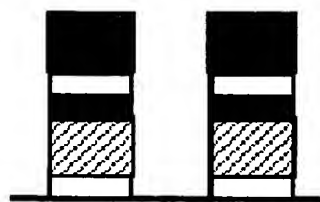
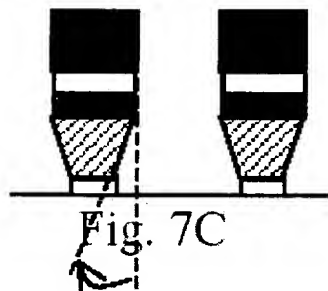
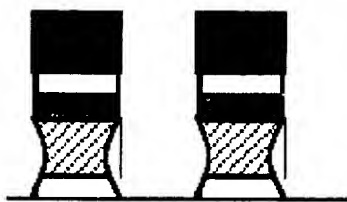
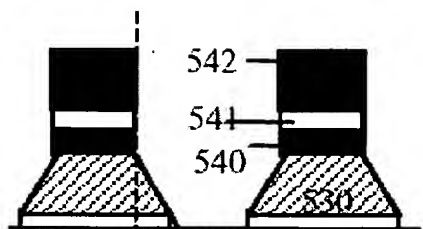
### D. WL-FG Coupling Factors in Read Mode

Read	Prior Art 1	Prior Art 2	Prior Art 3	Invention
Vwl	5	5	5	5
Vfg	x	x	x	x
Vsl	0	0	0	0
Vbl	1.5	1.5	1.5	1.2
Sfc, um	0.1	0.05	0.02	0.015
Cfc, fF	0.0140	0.0021	0.0070	0.0245
Cfsb, fF	0.0039	0.0053	0.0140	0.0140
Sfsd, um	0.0100	0.0100	0.0200	0.0150
Cfsd, fF	0.0035	0.0007	0.0035	0.0123
Fccf	0.3469	0.7391	0.7143	0.5172

Fig. 5H (Page 2 of 2)

Fig. 6





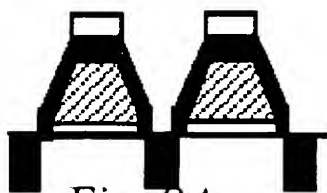


Fig. 8A

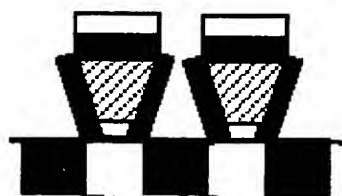


Fig. 8B

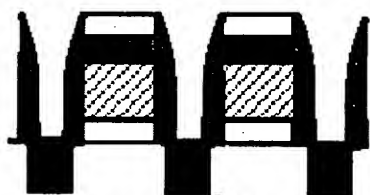


Fig. 8C

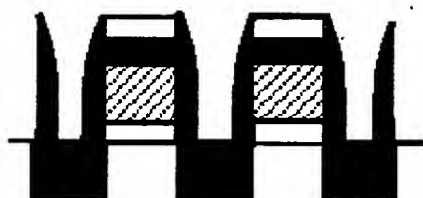


Fig. 8D

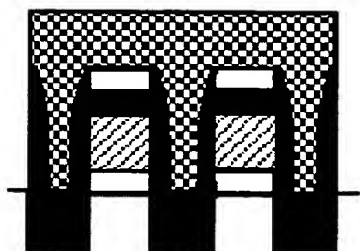


Fig. 9

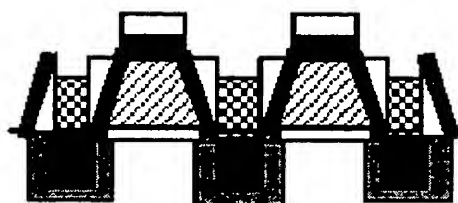


Fig. 9A

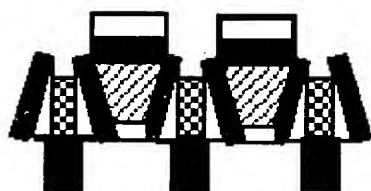


Fig. 9B

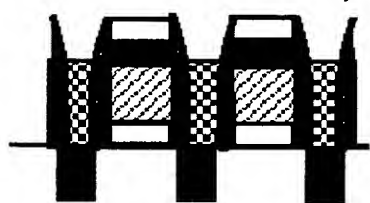


Fig. 9C

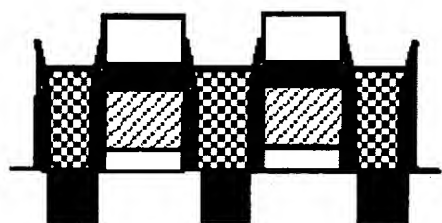


Fig. 9D

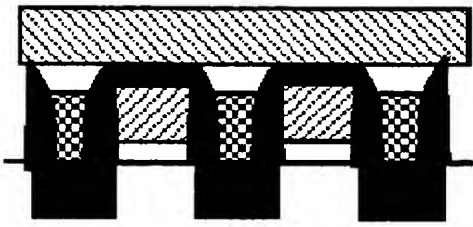


Fig. 10

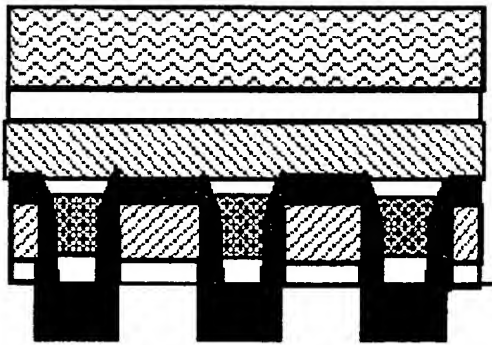


Fig. 11

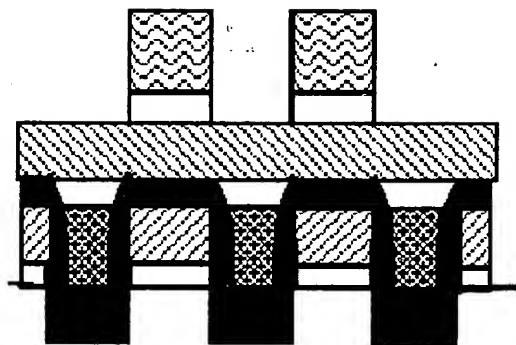


Fig. 11A

Fig. 12

